

**REMARKS**

Claims 1-2 and 4-5 are pending in this application. By this Amendment, claims 1 and 2 are amended to overcome the rejection under 35 U.S.C. §102(b), and claim 3 is canceled. Support for the amendment to claim 1 may be found at, for example, page 1, lines 22-23 of the specification. Support for the amendment to claim 2 may be found at, for example, page 1, lines 20-23 of the specification. No new matter is added by the Amendment.

In view of the foregoing amendments and following remarks, reconsideration and withdrawal of this rejection are thus respectfully requested.

**I. Rejection under 35 U.S.C. §102(b)**

Claims 1-3 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Japanese Patent Publication No. 2000-001765 (hereinafter "JP 765"). This rejection is respectfully traversed.

The Patent Office alleges that JP 765 discloses a gas mixture for vacuum carburizing steel "comprising 70% ethylene gas and 30% acetylene gas", which the ratio of acetylene to ethylene (0.428) allegedly falls within the claimed range. Although Applicants disagree with the Patent Office's conclusions, to expedite prosecution of this matter, Applicants have amended the claims to specify that the critical ratio of acetylene to ethylene of 0.55 to 2.0. As such, JP 765 does not anticipate the present claim because the ratio disclosed in JP 765 (0.428) is clearly outside the present claimed range of 0.55 to 2.0.

Also, the presently claimed range cannot be considered to be obvious under 35 U.S.C. §103(a). Attached hereto is a Rule 132 Declaration, demonstrating that the carbon carrier consumption between comparative sample C and comparative sample D representative of the present claims, decreased unexpectedly by a factor of two when the acetylene to ethylene ratio was increased from 0.23 to 0.69, while generating uniform carburized layers with no accumulation of soot or tar on the furnace chamber. Thus, the results in Table 1 demonstrate

that the acetylene to ethylene ratio of 0.55 to 2 is critical to achieving a uniformly carburized layer with no accumulation of soot or tar. JP 765, with an acetylene/ethylene ration outside of this range does not achieve such results.

As such, the present claims employing an acetylene to ethylene ratio of 0.55 to 2.0 also cannot be considered to have been obvious from JP 765 because the present claims demonstrate the criticality of having the appropriate range of acetylene to ethylene.

Applicants submit that the unexpected results and criticality achieved by a hydrogen gas mixture for the under pressure carburizing of steel with an acetylene to ethylene ratio of 0.55 to 2.0 demonstrate that JP (765) does not teach or suggest the claimed subject matter. Reconsideration and withdrawal of the rejection are thus respectfully requested.

**II. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-2 and 4-5 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: November 15, 2007

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